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ON SOME RESULTS OBTAINED BY THE D. O. MILLS EXPEDITION
TO THE SOUTHERN HEMISPHERE.*

In the extended program for determining the velocity of the solar system through space by means of the radial velocities of the stars, which has been in progress at the Lick Observatory for seven years, the need had long been felt for extending the scope of the work so as to cover the entire sky. For a full and rigorous solution of the problem it seemed absolutely imperative that the neglected portion of the southern sky within 60° of the South Pole be included. The generosity of Mr. D. O. MILLS made it possible to supply this deficiency. As is well known, the equipment sent to South America consisted of a powerful three-prism spectrograph attached to a 37-inch reflector of the Cassegrainian form. The Observatory is situated on the summit of Cerro San Cristobal in the city of Santiago, Chile, and definite work on the program was commenced on September 11, 1903, by Astronomer W. H. WRIGHT and Dr. H. K. PALMER. Up to June 1, 1904, three hundred and eight successful spectrograms had been secured.

One of the most interesting "by-products" of the spectrographic determination of the solar velocity, as carried out at Lick Observatory, has been the discovery that at least one in every seven or eight of the brighter stars are spectroscopic binaries. Similar results are being secured at the Southern Station, and in *Lick Observatory Bulletin*, No. 60, Mr. WRIGHT announces the binary character of five stars: β *Doradus*, W *Velorum*, λ *Carinal*, κ *Pavonis*, and τ *Sagittarii*.

Mr. WRIGHT has also succeeded in measuring the difference in radial velocity of the components of the visual binary α *Centauri*. From a combination of these data with the visual elements, as is well known, the parallax can be obtained with great accuracy and without the assumptions as to the great distance of the comparison-stars used which must be made in heliometrically determined parallaxes.

The values secured are:—

$$\begin{aligned}\pi &= 0''.76 \pm 0''.03 \\ \alpha &= 3.46 \times 10^9 \\ m_1 + m_2 &= 1.9\end{aligned}$$

GILL and ELKINS's value from heliometer observations was $0''.75 \pm 0''.01$, relative to the comparison-stars used, which were of average magnitude 7.6.

H. D. CURTIS.

* Abstract of *Lick Observatory Bulletin*, No. 60.